



October 23, 2003

Clinician Public Health Advisory

Update 2: Ricin toxin General Information

What Is Ricin?

- Ricin is a poison that can be made from the waste left over from processing castor beans.
- It can be in the form of a powder, a mist, or a pellet, or it can be dissolved in water or weak acid.
- It is a stable substance. For example, it is not affected much by extreme conditions such as very hot or very cold temperatures.

Where Is Ricin Found, and How Is It Used?

- Castor beans are processed throughout the world to make castor oil. Ricin is part of the waste “mash” produced when castor oil is made.
- Ricin has some potential medical uses, such as bone marrow transplants and cancer treatment (to kill cancer cells).

How Can People Be Exposed to Ricin?

- It would take a deliberate act to make ricin and use it to poison people. Accidental exposure to ricin is highly unlikely.
- People can breathe in ricin mist or powder and be poisoned.
- Ricin can also get into water or food and then be swallowed.
- Pellets of ricin, or ricin dissolved in a liquid, can be injected into people's bodies.
- Depending on the route of exposure (such as injection), as little as 500 micrograms of ricin could be enough to kill an adult. A 500-microgram dose of ricin would be about the size of the head of a pin. A much greater amount would be needed to kill people if the ricin were inhaled (breathed in) or swallowed.
- Ricin poisoning is not contagious. It cannot be spread from person to person through casual contact.

How Does Ricin Work?

- Ricin works by getting inside the cells of a person's body and preventing the cells from making the proteins they need. Without the proteins, cells die, and eventually the whole body can shut down and die.
- Specific effects of ricin poisoning depend on whether ricin was inhaled, swallowed, or injected.

What Are the Signs and Symptoms of Ricin Exposure?

- *Inhalation:* Within a few hours of inhaling significant amounts of ricin, the likely symptoms would be coughing, tightness in the chest, difficulty breathing, nausea, and aching muscles. Within the next few hours, the body's airways (such as lungs) would become severely inflamed (swollen and hot), excess fluid would build up in the lungs, breathing would become even more difficult, and

the skin might turn blue. Excess fluid in the lungs would be diagnosed by x-ray or by listening to the chest with a stethoscope.

- *Ingestion:* If someone swallows a significant amount of ricin, he or she would have internal bleeding of the stomach and intestines that would lead to vomiting and bloody diarrhea. Eventually, the person's liver, spleen, and kidneys might stop working, and the person could die.
- *Injection:* Injection of a lethal amount of ricin at first would cause the muscles and lymph nodes near the injection site to die. Eventually, the liver, kidneys, and spleen would stop working, and the person would have massive bleeding from the stomach and intestines. The person would die from multiple organ failure.
- Death from ricin poisoning could take place within 36 to 48 hours of exposure, whether by injection, ingestion, or inhalation. If the person lives longer than 5 days without complications, he or she will probably not die.
- Showing these signs and symptoms does not necessarily mean that a person has been exposed to ricin.

How Is Ricin Poisoning Treated?

- No antidote exists for ricin. Ricin poisoning is treated by giving the victim supportive medical care to minimize the effects of the poisoning. The types of supportive medical care would depend on several factors, such as the route by which the victim was poisoned (that is, by inhalation, ingestion, or injection). Care could include such measures as helping the victim breathe and giving him or her intravenous fluids and medications to treat swelling.

How Do We Know for Sure Whether People Have Been Exposed to Ricin?

- If we suspect that people have inhaled ricin, a possible clue would be that a large number of people who had been close to each other suddenly developed fever, cough, and excess fluid in their lungs. These symptoms could be followed by severe breathing problems and possibly death.
- No widely available, reliable test exists to confirm that a person has been exposed to ricin.

What Can People Do If They Think They May Have Been Exposed to Ricin?

Unintentional ricin poisoning is highly unlikely. CDC has no reports of intentional ricin poisoning. If people think they might have been exposed to ricin, however, they should contact the regional poison control center at 1-800-222-1222.

Reporting

Physicians and health care facilities should be report suspected cases of exposure to ricin to your county health department or to the DHEC Bureau of Disease Control in Columbia (803-898-0861)

District/County Health Department phone numbers:

All inquiries regarding the criminal investigation should be addressed to the FBI Office in Columbia (803-551-4200)

Internet Resources

S. C. Department of Health & Environmental Control <http://www.scdhec.net/hs/han/index.htm>

Centers for Disease Control <http://www.bt.cdc.gov/>

Statewide Urgently Reportable Conditions and Consultation number (24hr/7day): 1-888-847-0902